

## **ABSTRACT**

A chip-based capillary electrophoresis assembly including: a holder including a frame for removably receiving a chip; a capillary electrophoresis microchip dimensioned to fit onto the holder, and comprising a body and a separation channel defined in the body; and a pair of adhesive detection electrodes integrated with an electronic conductometric detection circuit, wherein the assembly is assemblable by disposing the capillary electrophoresis microchip on the holder and removably placing the adhesive electrodes on the microchip body near the separation channel. A label-free analyte conductometric detection method and a label-free capillary electrophoresis immunoassay method are also described.